Amy Bauer—Problem-solving fuels passion

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Always seeking challenges, Los Alamos researcher Amy Bauer faces her fears with aplomb. The Chicago native loves mountaineering, rock climbing, ski patrolling, scuba diving, skydiving and formula auto racing.

Curious and courageous, even a bit stubborn, Bauer overcame significant health and emotional issues and worked her way through college. She changed majors from finance to math (in fact, Bauer taught calculus for math majors without having taken the course!) and lost funding partway through grad school due to politics, but she refused to give up.

Mathematical model leads to potential drug and vaccine therapies

After receiving her doctorate in math, she joined Los Alamos as a graduate student focused on biology.

Bauer developed a mathematical model to study how cancer cells grow and spread (tumor angiogenesis). Her research suggested a way to combat cancer by starving a tumor of its blood flow and rendering it harmless.

She studied tuberculosis and HIV, creating a mathematical model to help researchers design drug and vaccine therapies.

Nuclear weapons systems, like biological systems, are highly complex at the molecular and smaller scales. Understanding the behavior of these systems requires mathematical modeling at those levels.

Innovative strategies for a smaller stockpile

So in 2010 Bauer was recruited by the Laboratory's Improvised and Foreign Designs Group to perform physics research in nuclear weapons materials and to support the development of better weapon-simulation tools.

A dedicated explorer, Bauer views the shift from biology to physics as an opportunity to learn new fields. She now works on a broad range of nuclear counterterrorism projects, including post-detonation nuclear forensics, in which samples of radioactive debris from detonated nuclear weapons are gathered and studied.

Along with her colleagues, Bauer has contributed to better ways of modeling certain foreign nuclear weapons, and she’s helping refine our understanding of foreign nuclear weapon technology.

She says as our nation moves toward a smaller stockpile, the necessity for the types of alternative strategies (established through the global security programs she’s involved with) becomes an increasing piece of a credible deterrent, supporting national security and promoting peace worldwide.

Balancing prolific career and motherhood

Bauer is inspired by Nobel-laureate Marie Curie’s passion for her groundbreaking work and her commitment to finding truth. Now a mother of two young daughters, Bauer also strongly admires her mother, who raised her as a single parent.

At the Lab, Bauer is guided by HIV researcher Bette Korber and weapons physicist Mary Hockaday, both of whom she admires for their integrity and leadership — their inspirational balance of motherhood and prolific scientific careers.

Career advice: Don't wait for opportunities!

Bauer's career advice? "Do something that you are passionate about. Don’t wait for opportunities—position yourself right and create them!"

"Adhere to a strong work ethic and always find a way to do what’s right, even if it is unpopular. Think for yourself and be heard, yet listen."

An active volunteer outside of the Lab, Bauer is creator of the K2 Women's Weekend at Pajarito Mountain, a charity event that raises money for people diag